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10/798,934	03/11/2004	James R. Gallagher	AUS920040004US1	6936
35525	7590	02/25/2008	EXAMINER	
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C/O YEE & ASSOCIATES PC				
P.O. BOX 802333			ART UNIT	
DALLAS, TX 75380			PAPER NUMBER	
			2182	
			NOTIFICATION DATE	
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			02/25/2008	
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ptonotifs@yeeiplaw.com

## Office Action Summary

**Application No.**

10/798,934

**Applicant(s)**

GALLAGHER ET AL.

**Examiner**

Tanh Q. Nguyen

**Art Unit**

2182

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 November 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-4, 7 and 21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 7 and 21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Objections*

1. Claims 1-2, 21 are objected to because of the following informalities:

“to combine that will” in line 5 of claim 1 should be replaced with *--for aggregation in order to--* to be consistent with “A method...for aggregation” recited in the preamble

“combining” in line 13 of claim 1 and “combination” in line 14 of claim 1 should be replaced with *--aggregating--* and *--aggregation--* respectively to be consistent with “A method...for aggregation” recited in the preamble

“determining current characteristics of said system includes determining direct memory access (DMA) capabilities and processor capacity of said system, wherein said DMA capabilities and processor capacity are said current characteristics” in lines 2-4 of claim 2 should be replaced with *--determining current characteristics of said system includes determining direct memory access (DMA) capabilities and processor capacity of said system--* because “wherein said DMA capabilities and processor capacity are said current characteristics” does not limit “determining current characteristics of said system includes determining direct memory access (DMA) capabilities and processor capacity of said system” any further

“to combine that will” in line 6 of claim 21 should be replaced with *--for aggregation in order to--* to be consistent with “A method...for aggregation” recited in the preamble

“combination” in line 15 of claim 21 should be replaced with *--aggregation--* to be consistent with “A method...for aggregation” recited in the preamble.

2. Claim 3 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim 3 recites "further comprising the step of: generating said new chain of buffers that includes an aggregation of said selected ones of said software buffers" in lines 2-3. The limitation appears to have the same scope of "selecting ones of said software buffers to combine" in line 5 of claim 1, and "creating a new chain of buffers that includes said new buffer instead of either said first or said second buffer" in lines 15-16 of claim 1 - hence not comprising a further step.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-4, 7, 21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites "dynamically selecting ones of said software buffers to combine that will maximize performance of said system while said data is being transferred" in lines 5-6. The limitations in lines 7-16 of claim 1 appear to be also directed to "dynamically selecting ones of said software buffers to combine" (see FIG. 4 and [0015] in the specification). The claim is indefinite because it is not clear whether the

limitations in lines 7-16 are (a) merely steps for dynamically selecting ones of said software buffers to combine, or (b) steps that are **in addition** to the step for dynamically selecting ones of said software buffers to combine.

Claim 21 recites "dynamically selecting ones of said software buffers to combine that will maximize performance of said system while said data is being transferred" in lines 5-6. The limitations in lines 8-16 of claim 21 appear to be also directed to "dynamically selecting ones of said software buffers to combine" (see FIG. 4 and [0015] in the specification). The claim is indefinite because it is not clear whether the limitations in lines 8-16 are (a) merely steps for dynamically selecting ones of said software buffers to combine, or (b) steps that are **in addition** to the step for dynamically selecting ones of said software buffers to combine.

Claim 21 recites the limitation ""said second buffers" in line 15. There is insufficient antecedent basis for this limitation in the claim.

5. The rejections that follow are based on the examiner's best interpretation of the claims.

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 1-4, 7, 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Duvall et al. (US 6,182,200).

9. As per claims 1, 21, Duvall teaches a method [FIGs. 3-5] in a data processing system [FIGs. 1-2] for dynamically selecting software buffers for aggregation in order to optimize system performance [col. 6, lines 8-14], said method comprising:

receiving data to be transferred to a device, said data being stored in a chain of software buffers [320, FIG. 3; 400, FIG. 4; 510-520, FIG. 5];

dynamically selecting ones of said software buffers to combine that will maximize performance of said system while said data is being transferred [530-560, FIG. 5; col. 5, line 60-col. 6, line 14];

determining a threshold [col. 3, lines 64-66] that has been assigned to an I/O adapter [110, 240 - FIG. 2] that is to be used to receive said data [col. 3, line 13-col. 4, line 40; col. 4, lines 13-31];

evaluating a first buffer in said chain [530, FIG. 5; col. 5, lines 57-59];

determining whether said first buffer is larger than said threshold [535, col. 5, lines 60-67];

in response to a determination that said first buffer is larger than said threshold, leaving said first buffer unchanged [col. 4, lines 55-57] and creating a new chain of buffers that includes said unchanged first buffer [a new chain is created on the first track, FIG. 3 with unchanged buffers (not shown) and aggregated buffers (one of which is an aggregated buffer on 340 that holds ABCD - FIG. 3) because a linked list is used to receive data (col. 5, lines 50-59) and also because 320 and 340 both represent the first track]; and

in response to a determination that said first buffer is not larger than said threshold, combining said first buffer with a second buffer in said chain to create a new buffer that is a combination of said first buffer and said second buffer [new buffer that hold ABCD is created on 330 - FIG. 3], and creating a new chain of buffers that includes said new buffer instead of either said first or said second buffer [a new chain is created in 340, FIG. 3 with an aggregated buffer that holds ABCD - FIG. 3].

Duvall does not teach determining current characteristics of the system. Brant et al. (US 6,629,158) teaches determining characteristics of a system to determine configuration options for the system [col. 5, lines 44-50; col. 6, lines 3-5]. Francis (US 2001/0018719) teaches a DMA engine being extended to support alternative applications [last 8 lines of [0001]], hence suggests determining whether an alternative application is compatible with the characteristics of a DMA engine - and requiring

determining the characteristics of the DMA engine in order to determine whether an application is compatible with the characteristics of the DMA engine. Simon teaches DMA capability being used to speed up data transfer [[0003]], hence suggests determining whether DMA capability exists in order to use DMA capability to speed up data transfer. AAPA (Applicant Admitted Prior Art - Description of Related Art [pages 1-3]) teaches DMA being preferred for large contiguous data transfers and possible extra use of CPU cycles to reduce the number of DMA transactions for small data transfers by aggregation of the small data transfers, hence suggests determining the characteristics of the data transfers to determine whether DMA is preferable over extra use of CPU cycles. It was also known in the art at the time the invention was made to determine the characteristics of a system in order to properly configure the system, and/or in order to determine whether an application is compatible with the system. It would have been therefore obvious to one of ordinary skill in the art at the time the invention was made to determine the current characteristics of the system taught by Duvall for the aforementioned reasons.

10. As per claim 2, Brant teaches determining characteristics of a storage system [col. 5, lines 44-50; col. 6, lines 3-5]. Since a storage system includes a controller, the characteristics of the storage system include controller capacity (i.e. processor capacity). Further since it was known for a storage system to exchange data with a system memory using DMA, it would have been obvious to one of ordinary skill in the art at the time the invention was made for the system of Brant to include DMA in order to exchange data with a system memory, and when is included, DMA capabilities need



to be determined in order to properly determine configuration options for the system.

Francis suggests determining the characteristics of the DMA engine in order to determine whether an application is compatible with the characteristics of a DMA engine. Simon suggests determining whether DMA capability exists in order to use DMA capability to speed up data transfer. AAPA teaches suggests reducing the number of DMA transactions and determining whether a system has enough available CPU cycles - hence determining DAMA capabilities and processor capacity of a system (see the rejections of claim 1 above).

11. As per claim 3, Duvall teaches generating a new chain of buffers that includes an aggregation of said selected ones of said software buffers (see the rejection of claim 1 above).

12. As per claim 4, Duvall does not teach setting a threshold for each combination of I/O adapter, slot size, and system characteristics.

Oliver teaches calculating a block size threshold as a function of the determined maximum input/output bandwidth (that is partitioned into a number of different I/O channels) and the data characteristic of the drive for a disk-based filed system [Abstract; FIGs. 3-4; col. 3, line 58-col. 4, line 57], hence suggests setting a threshold for a combination of I/O adapter (that is necessary for a disk-based file system), slot size (number of channels [col. 4, lines 49-57]) and system characteristics (data characteristics of the system) in order to allocate block sizes that prevent both fragmentation and wasted space [col. 2, lines 9-13].

It would have been obvious to one of ordinary skill in the art at the time the

invention was made to set the threshold for each combination of I/O adapter, slot size, and system characteristics, as is suggested by Oliver, in order to allocate block sizes that are large enough to prevent both fragmentation and wasted space

13. As per claim 7, Duvall teaches transmitting said data using said new chain instead of said chain (data from 340 [FIG. 3] being transmitted to AES interface 260 [FIG. 2]).

**Examiner's note:** *Examiner has cited particular page, column and line number(s) in the references applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to specific limitations within the individual claim, other passages and figures may apply as well. Applicant needs to consider the references in their entirety as potentially teaching all or part of the claimed invention.*

*In the case of amending the claimed invention, Applicant is respectfully requested to indicate the portion(s) of the specification which dictate(s) the structure relied on for proper interpretation and verification of the metes and bounds of the claimed invention.*

### **Response to Arguments**

14. Applicant's arguments with respect to the pending claims have been considered but are moot in view of the new ground(s) of rejection.

### **Conclusion**

Any inquiry concerning this communication or earlier communications from the

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Art Unit: 2182

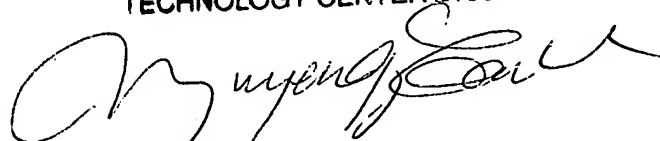
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examiner should be directed to Tanh Q. Nguyen whose telephone number is 571-272-4154. The examiner can normally be reached on M-F 9:30AM-7:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alford Kindred can be reached on 571-272-4037. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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February 8, 2008

TQN  
February 8, 2008